



Research Article



## The Effect of Structural Parallel Exchange Rate and Broad Money Supply Shocks on Economic Inflation in the Iraqi Economy for the Period 2020–2025 Using the SVAR Model

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**Abstract:** This study investigates the impact of structural parallel exchange rate and broad money supply shocks on economic inflation in Iraq using monthly data for the period 2020–2025. Applying a Structural Vector Autoregressive (SVAR) model, the empirical findings reveal that both the parallel exchange rate and broad money supply exert significant positive effects on inflation. However, structural impulse response functions and variance decomposition indicate that parallel exchange rate volatility is a more dominant and persistent driver of inflation than broad money supply shocks in the Iraqi rentier economy. The study concludes that stabilizing the parallel exchange rate is crucial for curbing inflationary pressures and ensuring monetary stability, necessitating coordinated policy measures by the Central Bank of Iraq.

**Keywords:** Parallel Exchange Rate, Broad Money Supply, Inflation, Iraqi Economy



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## INTRODUCTION

Developing economies, including Iraq, are characterized by low productivity and depressed income levels. This is attributed to the underdeveloped nature of the institutions, social, and political values defining their societies, as well as the lack of an advanced, orderly financial, monetary, and banking system. Furthermore, these countries possess a distorted, inefficient, and poorly organized economic structure, making them highly vulnerable to various shocks, including those originating from monetary and fiscal variables.

This study attempts to shed light on parallel exchange rate shocks and broad money supply shocks and their impact on inflation. Hence, the importance of this study lies in demonstrating, measuring, and estimating the magnitude and effects of structural parallel exchange rate and broad money supply shocks on inflation, as well as determining which of these variables is more effective and influential in driving economic inflation.

### Research Problem

The Iraqi economy suffers from high inflation. Therefore, the Central Bank must intervene to curb this phenomenon, address structural imbalances, and tackle the rentier nature that has plagued the economy for a long time. From this perspective, the following questions are raised:

1. First: Can the Central Bank control inflation through the parallel exchange rate and

- broad money supply in both the short and long runs?
2. Second: Which of these two variables (parallel exchange rate or broad money supply) has a greater impact on monetary inflation in the short and long runs?

### Research Hypothesis

By utilizing monetary policy instruments through its variables—the parallel exchange rate and broad money supply—the Central Bank can limit and curb the phenomenon of inflation.

### Research Objectives

The objectives of the study are confined to achieving several goals, most notably: determining the magnitude and type of impact that the parallel exchange rate exerts on inflation in the short and long runs, as well as determining the magnitude and type of impact that the broad money supply has on inflation over the same periods. This is intended to help implement direct and indirect, traditional and modern procedures and policies to address the problem of high inflation. It is well known that rentier economies, including Iraq, are easily exposed to external shocks due to their reliance on a single primary commodity for exports, coupled with a wide variety of imported goods that deplete massive financial resources to satisfy the severe deficit in various goods and services, whether consumer or capital goods.

## METHOD

### Literature Review

There are numerous theoretical and empirical studies that have addressed the impact of monetary and fiscal shocks on macroeconomic variables. These studies have reached varying conclusions regarding economic and statistical significance, depending on the circumstances of each country and the econometric approach employed. These papers differ in the interpretation of their findings, and we will focus on a selection of them below:

Al-Sabaawi Study (2012): Investigated the role of monetary and fiscal policies in macroeconomic analysis in selected developing countries for the period 1985–2010. The study utilized broad money supply, interest rates, exchange rates, and the budget deficit as independent variables, while the inflation rate and unemployment rate served as dependent variables, focusing on Turkey and Indonesia. Applying descriptive, analytical, and econometric methods via a multiple linear regression model, the study concluded that monetary policy can be used to achieve economic stability if the increase in money supply is kept equal to net national product growth without resorting to expansionary or contractionary policies. It also highlighted the contribution of dollarization to achieving economic stability, a phenomenon expected to have a long-term positive impact on the economy. [1]

Al-Khabbazi Study (2016): Entitled "The Problem of Exchange Rate Instability and the Role of Macroeconomic Policies in Treating It." This study aimed to clarify the effects of monetary policy on macroeconomic policies. It revealed that monetary policy cannot control the exchange rate in the long run, as its effectiveness is limited only to the short run. Therefore, there must be harmony between monetary policy and fiscal policy in the long run to properly manage the exchange rate. [2]

Al-Tahmazi Study (2023): Examined "The Role of Fiscal and Monetary Policies in Achieving Inclusive Growth: Experiences of Selected Countries with Special Reference to Iraq." The independent variables included public revenues, public expenditures, money supply, interest rates, the rediscount rate, and required reserves. The sample covered the United States, the UAE, and Iraq for the period 2004–2021 using annual data. The study aimed to trace the chronological development of fiscal and monetary variables and their impact on inclusive growth using the ARDL model, alongside a descriptive and analytical approach. The study concluded that public expenditure helps achieve inclusive growth because it is a powerful tool capable of creating employment opportunities, making individuals active participants and beneficiaries of growth dynamics. It also showed that tax revenues contribute significantly to inclusive growth, as taxes influence employment, investment, and economic expansion. [3]

Deeb & Qudaïd Study (2024): Entitled "The Effect of the Effective Exchange Rate on Economic Growth in Algeria for the Period 1980–2021." This study aimed to analyze the impact of the real effective exchange rate on Algerian economic growth using a descriptive-analytical approach and

the Autoregressive Distributed Lag (ARDL) model. GDP was the dependent variable, while the independent variables were the current exchange rate (real effective exchange rate), government expenditure, broad money supply, oil rent, and population. The study concluded that the real effective exchange rate coefficient was negative and statistically significant, indicating an inverse relationship between the real effective exchange rate and economic growth, alongside positive and significant impacts for the other variables. [4]

Jabr & Al-Araji Study (2023): Entitled "Analyzing and Measuring the Relationship Between Money Supply and Exchange Rate in Iraq for the Period 2004–2021." This study aimed to analyze the effectiveness of the money supply within the framework of exchange rate stability in Iraq using an inductive approach (multiple regression analysis). The parallel exchange rate was used as the dependent variable, and broad money supply acted as the independent variable. The study concluded that the Central Bank's use of the currency sale window acts as an effective tool in maintaining the stability of the Iraqi Dinar exchange rate, noting that there is no specialized foreign exchange market indicator for the Iraqi Dinar due to the absence of a dedicated independent foreign exchange market. [5]

## RESULT AND DISCUSSION

### Econometric Framework and Empirical Analysis

Measuring and analyzing the impact of structural shocks of the parallel exchange rate and broad money supply on inflation in Iraq during the period (2020–2025).

To measure and analyze the impact of structural parallel exchange rate and broad money supply shocks on inflation in Iraq, this study utilizes a **Structural Vector Autoregressive (SVAR)** model based on monthly data for the period 2020–2025, processed via **EViews 12**. The model consists of three endogenous variables: Parallel Exchange Rate ( ER ), Broad Money Supply ( M2 ), and Inflation ( INF ). To achieve the research objectives and verify its hypotheses, the model is specified in the following reduced form: [6]

$$X_t = A_L X_{t-1} + U_t \quad \dots (1)$$

Where  $X_t = (ER, M2, INF)'$  represents the vector of endogenous variables, which must be independent among themselves.  $A$  represents the matrix of regression coefficients for the reduced-form VAR model.

$$U_t = [U_t^{ER}, U_t^{M2}, U_t^{INF}]' \quad \dots (2)$$

This denotes the vector of reduced-form, serially uncorrelated residuals. In order to identify structural shocks, a transition matrix (  $S$  ) must be constructed to satisfy the relationship:

$$U_t = S \cdot \varepsilon_t$$

To identify the transition matrix, the structural restriction equality is formulated as:

$$A U_t = B \varepsilon_t$$

Where  $S = A^{-1} B$ . The diagonal elements of matrices  $A$  and  $B$  are normalized to 1, while the off-diagonal elements are determined based on economic theory and institutional knowledge of the Iraqi economy. When it is assumed that a certain residual does not contemporaneously affect another variable within the same period, that element is restricted to zero. Conversely, if a contemporaneous effect is assumed to exist, its value is estimated. These represent the short-run economic restrictions.

### First: Descriptive and Statistical Analysis of Variables

Statistical and descriptive analysis provides a comprehensive overview of the standalone behavior of each variable used in the research by presenting the Mean, Median, Maximum, Minimum, and the Jarque-Bera normality test. The general characteristics and trends of the variables are presented in Table (1):

**Table 1.** Descriptive Statistics for the Variables Included in the Model

| Statistical Indicators | Parallel Exchange Rate (ER) | Broad Money Supply (M2) | Inflation (INF) |
|------------------------|-----------------------------|-------------------------|-----------------|
| <b>Mean</b>            | 1444.597                    | 152822.0                | 0.25            |
| <b>Median</b>          | 1475.000                    | 167786.5                | 0.20            |
| <b>Minimum</b>         | 1210                        | 102531.0                | -1.20           |
| <b>Maximum</b>         | 1603                        | 181092.0                | 4.00            |
| <b>Jarque-Bera</b>     | 3.3607 (0.1863)             | 4.0719 (0.1305)         | 1.5910 (0.4513) |

*Source: Compiled by the researcher based on monthly data (2020–2025) using EViews 12.*

From Table (1), the following points are observed:

1. Parallel Exchange Rate (ER): During the study period, it ranged between a minimum of 1210 and a maximum of 1603, with a mean of 1444.597 and a median of 1475.000. The probability value (p-value) of the Jarque-Bera test is 0.1863, which is greater than the 5% critical significance level. Based on this, the parallel exchange rate follows a normal distribution.
2. Broad Money Supply (M2): Ranged between a minimum of 102,531 billion Dinars and a maximum of 181,092 billion Dinars, with an average of 152,822 and a median of 167,786.5. The Jarque-Bera p-value is 0.1305, which is greater than 0.05, indicating that the broad money supply is normally distributed.
3. Inflation (INF): Ranged between a minimum rate of -1.20 and a maximum of 4.00, with a mean of 0.25 and a median of 0.20. The Jarque-Bera p-value is 0.4513, exceeding the 5% significance level, which demonstrates that the inflation series follows a normal distribution.

Second: Unit Root and Stationarity Test

Stationarity implies that a time series is temporally homogeneous; its mean, variance, and autocovariance structure do not vary over time. Testing for stationarity is essential to assess the stability of the variables in the model. Although several tests are available, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are the most widely recognized. The empirical results are displayed below: [7], [8]

**Table 2.** Unit Root Test Results for Stationarity

| Variables                 | ADF: Level               | ADF: First Difference    | PP: Level                | PP: First Difference     |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                           | <b>Intercept / Trend</b> | <b>Intercept / Trend</b> | <b>Intercept / Trend</b> | <b>Intercept / Trend</b> |
| <b>Exchange Rate (ER)</b> | 0.1769 / 0.7819          | 0.0000 / 0.0000          | 0.1746 / 0.7819          | 0.0000 / 0.0000          |
| <b>Money Supply (M2)</b>  | 0.0336 / 0.9990          | 0.0000 / 0.0000          | 0.0607 / 0.9978          | 0.0000 / 0.0000          |
| <b>Inflation (INF)</b>    | 0.0000 / 0.0002          | 0.0000 / 0.0000          | 0.0000 / 0.0000          | 0.0001 / 0.0001          |

*Source: Compiled by the researcher based on monthly data (2020–2025) using EViews 12.*

Table (2) indicates that based on the ADF and PP tests, while some stationary cases are observed at the level, all variables become strictly stationary at the first difference under a 5% significance level (where the Prob. value is less than 0.05). In other words, taking the first difference ensures stationarity across all time series data, validating the next step of testing for Co-integration among the variables under study.

Third: Correlation Matrix (r)

The main purpose of conducting a correlation analysis is to determine the strength and direction of the relationships between the variables. The correlation coefficient ( r ) ranges between 0 and 1, where a value closer to 1 implies a strong relationship and a value closer to 0 implies a weak relationship. The results are as follows:

**Table 3.** Correlation Matrix Between Model Variables

| Independent Variables              | Correlation Coefficient Value (r) | Dependent Variable |
|------------------------------------|-----------------------------------|--------------------|
| <b>Parallel Exchange Rate (ER)</b> | 0.3033                            | Inflation (INF)    |
| <b>Broad Money Supply (M2)</b>     | 0.0940                            | Inflation (INF)    |

Source: Compiled by the researcher based on monthly data (2020–2025) using EViews 12.

Table (3) reveals a positive correlation between both the parallel exchange rate and broad money supply with inflation, though the strength varies. This implies that an increase in the parallel exchange rate contributes to a rise in inflation, and similarly, an expansion in the broad money supply leads to an upward movement in inflation rates.

Fourth: Co-integration Test (Johansen Approach)

Co-integration testing follows the confirmation of stationarity and correlation. The Johansen Co-integration test is a primary method used to determine long-run equilibrium relationships among variables, enabling robust model estimation. It requires at least one co-integrating vector between the independent variables and the dependent variable. Table (4) outlines the results: [9]

**Table 4.** Johansen Co-integration Test Results

| Variables                 | Trace Statistic | Critical Value (0.05) | Prob.  | Max-Eigen Statistic | Critical Value (0.05) | Prob.  |
|---------------------------|-----------------|-----------------------|--------|---------------------|-----------------------|--------|
| <b>Exchange Rate (ER)</b> | 44.7867         | 29.7970               | 0.0005 | 25.3716             | 21.1316               | 0.0119 |
| <b>Money Supply (M2)</b>  | 19.4150         | 15.4947               | 0.0122 | 11.6239             | 14.2646               | 0.1256 |
| <b>Inflation (INF)</b>    | 7.7911          | 3.8414                | 0.0053 | 7.7911              | 3.8414                | 0.0053 |

Source: Compiled by the researcher based on monthly data (2020–2025) using EViews 12.

The Johansen test table demonstrates that all variables share a co-integrating relationship at the 5% level of significance. Based on the Trace statistic, we accept the alternative hypothesis of significant economic and econometric co-integrating relations. Consequently, these findings support the validity of proceeding with the structural model estimation.

## Fifth: Granger Causality Tests

Granger Causality tests are heavily relied upon in empirical economics to confirm the directional and predictive relationships between variables. The results are reported in Table (5): [10]

**Table 5.** Granger Causality Test Results

| Direction of Causality                               | Probability (Prob.) | Decision (at 5%)   |
|------------------------------------------------------|---------------------|--------------------|
| <b>Parallel Exchange Rate \to Inflation</b>          | 0.0000              | Highly Significant |
| <b>Inflation \to Parallel Exchange Rate</b>          | 0.0000              | Highly Significant |
| <b>Broad Money Supply \to Inflation</b>              | 0.0002              | Highly Significant |
| <b>Inflation \to Broad Money Supply</b>              | 0.0004              | Highly Significant |
| <b>Parallel Exchange Rate \to Broad Money Supply</b> | 0.0015              | Highly Significant |
| <b>Broad Money Supply \to Parallel Exchange Rate</b> | 0.0011              | Highly Significant |

Source: Compiled by the researcher based on monthly data (2020–2025) using EViews 12.

Table (5) confirms, through probability values well below 0.05, the existence of bidirectional feedback (causality) between all variables at different lag intervals. These interactions satisfy the foundational requirements for specifying a Structural VAR (SVAR) framework.

## Sixth: Lag Length Selection Criteria

Determining optimal lag intervals avoids serial correlation problems within the error terms. The Akaike Information Criterion (AIC) is favored for model selection among competing frameworks, where smaller values indicate the most optimal lag specification. [11]

**Table 6.** VAR Lag Order Selection Criteria

VAR Lag Order Selection Criteria

Endogenous variables: **ER M2 INF**

Exogenous variables: C

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Sample: 2020M01 2025M12

Included observations: 66

| Lag | LogL      | LR       | FPE     | AIC           | SC       | HQ       |
|-----|-----------|----------|---------|---------------|----------|----------|
| 0   | -1188.908 | NA       | 9.74e+1 | 36.11841      | 36.21794 | 36.15774 |
| 1   | -972.1190 | 407.2997 | 1.80e+0 | 29.82179      | 30.2199  | 29.9791  |
| 2   | -960.4109 | 20.9327  | 1.66e+0 | <b>29.739</b> | 30.43643 | 30.01503 |
| 3   | -954.6948 | 9.699985 | 1.84e+0 | 29.83924      | 30.83453 | 30.23253 |

|   |           |          |         |          |          |          |  |
|---|-----------|----------|---------|----------|----------|----------|--|
|   |           |          | 2.05e+0 |          |          |          |  |
| 4 | -949.0213 | 9.111905 | 9       | 29.94004 | 31.23393 | 30.45132 |  |
|   |           |          | 2.16e+0 |          |          |          |  |
| 5 | -941.2418 | 11.78717 | 9       | 29.97702 | 31.56950 | 30.60629 |  |
|   |           |          | 2.70e+0 |          |          |          |  |
| 6 | -938.9659 | 3.241488 | 9       | 30.18078 | 32.07185 | 30.92803 |  |

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

The criteria selection results indicate that the optimal lag length for the model is **2**, which corresponds to the lowest value of the Akaike Information Criterion (AIC).

#### Seventh: Structural Stability of the VAR Model

An unstable VAR system produces spurious and invalid results. Therefore, stability diagnostics must be carried out. As shown in Figure (1) and Table (7), the estimated roots are checked against the unit circle. [12]

**Table 7.** VAR Stability Diagnostics (Roots of Characteristic Polynomial)

Roots of Characteristic Polynomial

Endogenous variables: ER M2 INF

Exogenous variables: C

Lag specification: 1 2

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| Root                  | Modulus  |
|-----------------------|----------|
| 0.954352              | 0.954352 |
| 0.874465              | 0.874465 |
| 0.362822              | 0.362822 |
| -0.043645 - 0.269116i | 0.272632 |
| -0.043645 + 0.269116i | 0.272632 |
| -0.176474             | 0.176474 |

**No root lies outside the unit circle.**

**VAR satisfies the stability condition.**

**Inverse Roots of AR Characteristic Polynomial**

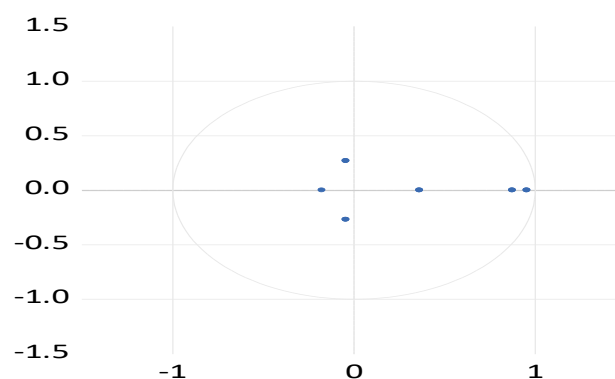


**Figure 1.** Structural Stability Plot (Conceptual representation)

*All roots fall within the boundary of the unit circle, confirming that the absolute modulus value for each root is strictly less than 1. Hence, the VAR model meets the stability condition.*

#### Eighth: Identification of the SVAR Framework

The SVAR framework bridges economic theory and pure time series modeling to map the dynamic response of macroeconomic variables to structural shocks. After confirming series stationarity and system stability, the following operational hypotheses are imposed in alignment with the institutional realities of the Iraqi economy: [13], [14]

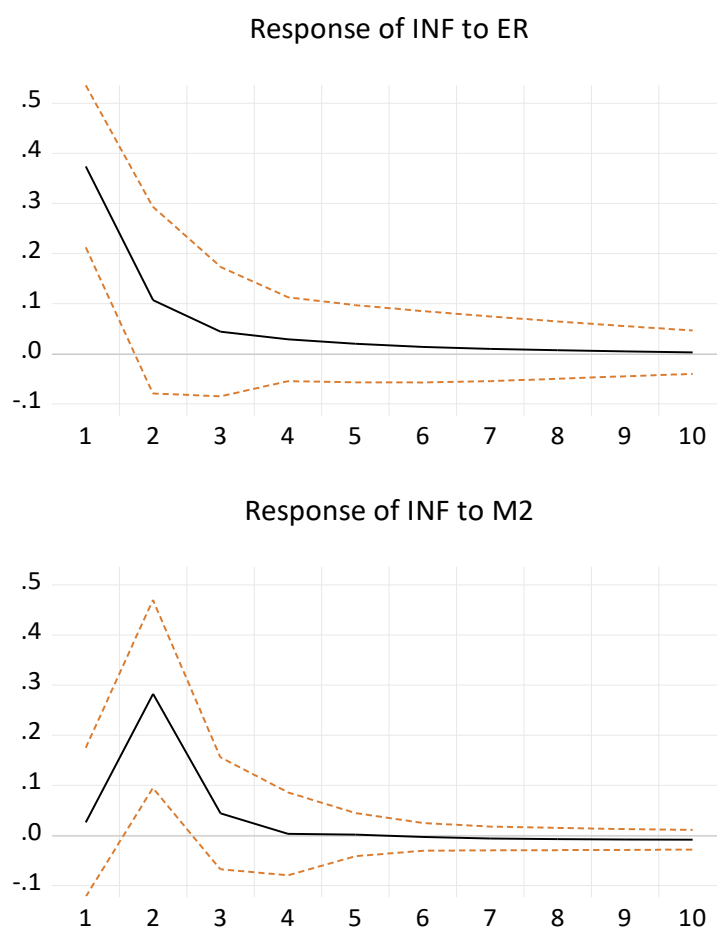
1. Hypothesis 1: Any unexpected structural innovation in the parallel exchange rate does not exert an immediate contemporaneous impact on inflation within the same month, allowing only for a lagged response, whereas inflation responds immediately to its own structural shocks.
2. Hypothesis 2: Any unexpected change in the broad money supply does not have an immediate contemporaneous effect on inflation, though it can react to other structural disturbances over a longer horizon.

By placing these linear restrictions on matrices  $A$  and  $B$ , the structural system is uniquely identified, yielding the following estimated structural matrices from Appendix (2):

$$A = \begin{bmatrix} 1 & 0 & 0 \\ -12.6985 & 1 & 0 \\ -0.0132 & -0.00001 & 1 \end{bmatrix}$$

$$S = \begin{bmatrix} 27.8905 & 0 & 0 \\ 354.168 & 2009.22 & 0 \\ 0.37410 & 0.02625 & 0.620986 \end{bmatrix}$$

Matrix  $A$  holds the coefficients of contemporaneous interactions. The main diagonal values of 1 represent the unit impact of a variable on itself. The coefficient  $-12.6985$  shows the instant path from parallel exchange rates to money supply dynamics under Hypothesis 2. In the third row, a one-unit change in the exchange rate shock yields a structural transmission factor on inflation, conforming to economic theory since currency depreciation directly elevates the general price level of imports. Diagonal Matrix  $B$  isolates pure structural shocks, where  $27.8905$  marks the immediate volatility footprint of internal inflation innovations. Matrix  $S$  models the system's dynamic adjustments, mapping how a one-standard-deviation structural shock passes through to the endogenous variables over time. For example, a structural parallel exchange rate innovation immediately influences inflation by a factor of  $0.3741$ .

Response to Cholesky One S.D. (d.f. adjusted) Innovations  $\pm 2$  S.E.**Figure 2.** Structural Impulse Response Functions Estimation Results**Ninth: Structural Impulse Response Functions (IRF)**

Impulse response functions track the dynamic path of an endogenous variable over a specified time horizon following a one-standard-deviation shock to a structural innovation. Figure (2) and Table (8) present the responses over a 10-period horizon, where the horizontal axis plots the timeline post-shock and the vertical axis measures percentage responses. [15]

**Table 8.** Structural Impulse Response of Inflation (INF) to Shocks

| Period   | Response to Parallel Exchange Rate (ER) | Response to Broad Money Supply (M2) |
|----------|-----------------------------------------|-------------------------------------|
| <b>1</b> | 0.374103 (0.08074)                      | 0.026255 (0.07426)                  |
| <b>2</b> | 0.106921 (0.09303)                      | 0.282369 (0.09384)                  |
| <b>3</b> | 0.044138 (0.06453)                      | 0.044054 (0.05581)                  |
| <b>4</b> | 0.028735 (0.04183)                      | 0.003104 (0.04134)                  |
| <b>5</b> | 0.020016 (0.03851)                      | 0.001595 (0.02151)                  |
| <b>6</b> | 0.013652 (0.03563)                      | -0.003133 (0.01385)                 |

| Period    | Response to Parallel Exchange Rate (ER) | Response to Broad Money Supply (M2) |
|-----------|-----------------------------------------|-------------------------------------|
| <b>7</b>  | 0.009880 (0.03223)                      | -0.006276 (0.01186)                 |
| <b>8</b>  | 0.007102 (0.02860)                      | -0.007419 (0.01107)                 |
| <b>9</b>  | 0.004835 (0.02503)                      | -0.008094 (0.01041)                 |
| <b>10</b> | 0.002964 (0.02169)                      | -0.008580 (0.00980)                 |

*Cholesky Ordering: ER, M2, INF. Standard Errors: Analytic (values in parentheses).*

Interpretation of Table (8):

1. Response of Inflation to a Parallel Exchange Rate Shock: A one-standard-deviation structural shock to the parallel exchange rate in period 1 ( 0.3741 ) induces an immediate increase in inflation by 0.0807 . In period 2, as the shock persists ( 0.1069 ), inflation adjusts by 0.0930 . By period 3, the shock tapers to 0.0441 , moving inflation by 0.0645 . In the medium-to-long run (from period 4 onwards), the inflationary pressure begins to decay. This confirms that parallel exchange rate shocks exert a significant upward pressure on inflation.
2. Response of Inflation to a Broad Money Supply Shock: A structural innovation in the broad money supply in period 1 ( 0.0262 ) raises inflation by 0.0742 . In period 2, the money supply impulse expands significantly to 0.2823 , driving inflation up by 0.0938 . In period 3, the effect moderates ( 0.0440 ), causing an inflation response of 0.0558 . Beyond period 4, the expansionary effect dissipates, turning slightly negative, which shows that excessive expansion of the monetary mass acts as a key driver of domestic inflation.

Tenth: Structural Variance Decomposition Analysis

Variance decomposition quantifies the relative importance of each structural shock in explaining the forecast error variance of the endogenous variables over time.

**Table 9.** Structural Variance Decomposition of Inflation (INF)

| Period    | S.E.     | Shock ER (%) | Shock M2 (%) | Shock INF (%) |
|-----------|----------|--------------|--------------|---------------|
| <b>1</b>  | 27.89055 | 26.59361     | 0.130987     | 73.27540      |
| <b>2</b>  | 40.42925 | 23.97800     | 12.73799     | 63.28401      |
| <b>3</b>  | 50.47858 | 24.10426     | 12.94747     | 62.94828      |
| <b>4</b>  | 57.81853 | 24.19683     | 12.92909     | 62.87407      |
| <b>5</b>  | 63.11154 | 24.24347     | 12.92083     | 62.83570      |
| <b>6</b>  | 67.00011 | 24.26503     | 12.91828     | 62.81669      |
| <b>7</b>  | 69.90094 | 24.27477     | 12.92150     | 62.80372      |
| <b>8</b>  | 72.08927 | 24.27835     | 12.92782     | 62.79383      |
| <b>9</b>  | 73.75594 | 24.27838     | 12.93615     | 62.78547      |
| <b>10</b> | 75.03538 | 24.27641     | 12.94591     | 62.77769      |

Table (9) shows that in the first period, 73.27% of inflation's forecast error variance is explained by its own structural shocks, while the parallel exchange rate accounts for 26.59%, and the money supply accounts for a minimal 0.13%. By the tenth period, the proportion explained by parallel exchange rate shocks stabilizes at 24.27%, whereas the explanatory power of broad money supply shocks rises to 12.94%. This demonstrates that the parallel exchange rate plays a much larger role in driving inflation variance compared to broad money supply shocks.

#### **Eleventh: Parameter Estimation via VAR**

To evaluate the long-run impact of the parallel exchange rate and broad money supply on inflation, the long-run estimated coefficients from the VAR system are summarized in Table (10):

**Table 10.** Summary of Estimated VAR Coefficients

| Variables                          | Estimated Parameters | Type of Impact          |
|------------------------------------|----------------------|-------------------------|
| <b>Parallel Exchange Rate (ER)</b> | 0.0046               | Positive (Proportional) |
| <b>Broad Money Supply (M2)</b>     | 0.0001               | Positive (Proportional) |

*Source: Compiled by the researcher based on monthly data (2020–2025) using EViews 12.*

Table (10) demonstrates that both variables exert a positive and statistically significant effect on inflation, meaning that increases in either variable lead to higher inflation. However, the magnitude of the impact varies: the effect of the parallel exchange rate is estimated at 0.0046, while the effect of the broad money supply stands at 0.0001. This indicates that inflation in Iraq is highly sensitive to parallel exchange rate fluctuations compared to changes in the money supply. [15] [16]

#### **Twelfth: Diagnostic Post-Estimation Tests**

To verify the validity and reliability of the estimated model, diagnostic tests were conducted to check for serial correlation, non-normality, and heteroskedasticity.

**Table 11.** Summary of Econometric Diagnostic Tests

| Type of Diagnostic Test             | Probability (p-value) | Decision (at 5% level)             |
|-------------------------------------|-----------------------|------------------------------------|
| <b>Serial Correlation (LM Test)</b> | 0.6297                | No serial correlation problem      |
| <b>Normality Test (Jarque-Bera)</b> | 0.7898                | Residuals are normally distributed |
| <b>Heteroskedasticity Test</b>      | 0.1471                | Residuals are homoskedastic        |

*Source: Compiled by the researcher based on monthly data (2020–2025) using EViews 12.*

Table (11) shows that the model is free from major econometric issues. The p-values for all three tests exceed 0.05, leading us to accept the null hypotheses of no serial correlation, normally distributed residuals, and homoskedastic variances, which confirms the reliability of the empirical findings [17], [18].

## **CONCLUSION**

1. The empirical analysis demonstrates that both the parallel exchange rate and broad money supply exert a positive (proportional) effect on inflation, meaning that an increase in either variable directly feeds into inflationary pressures.

2. An unexpected structural shock to the parallel exchange rate triggers a rapid increase in inflation in the short run. Although the immediate impulse subsides over time, its cumulative upward pressure on prices remains persistent before decaying in the medium-to-long run. This highlights the severe vulnerability of domestic prices to parallel currency market volatility.
3. A structural shock to the broad money supply causes an increase in inflation. While its short-run impact appears modest, the inflationary effect intensifies over the medium horizon before gradually dissipating. This underscores the structural role that liquidity expansion plays in driving inflation.
4. Variance decomposition shows that the parallel exchange rate accounts for a much larger share of inflation's forecast error variance compared to the broad money supply. This indicates that exchange rate volatility is a more dominant driver of inflation in Iraq than expansionary monetary growth.

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